Dr.-Ing. Olympia Panagouli
Associate Professor
Department of Civil Engineering – University of Thessaly – Volos – Greece

Short curriculum vitae

1. PERSONAL DATA

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1.1 Education - Training

February 1988:	Diploma in Civil Engineering, National Technical University of Athens, Department of Civil Engineering.
June 1992	Doctoral degree, Department of Civil Engineering, Aristotle University of Thessaloniki.

1.2 Professional – academic background

2019-today	Associate Professor, Dept. Of Civil Engineering Univ. of Thessaly-Greece.
2007-2019	Assistant Professor, Dept. Of Civil Engineering Univ. of Thessaly-Greece.
2003-2007	Adjunct Assist. Prof. at the Dept. of Civil Eng. – Univ. of Thessaly.
1999-2002	Adjunct Assist. Prof. at the Dept. of Architecture – Univ. of Thessaly.
1988-1998	Research Associate, Dept. of Civil Eng. Aristotle Univ., Thessaloniki.
1992 - 2007:	Static analysis and design of various structural projects.
Languages:	English (fluent)

2. ACADEMIC ACTIVITY

2.1 Teaching (undergraduate courses)

Teaching of the following courses at the Department of Civil Engineerimg, University of Thessaly:

- Rigid Body Mechanics (2nd semester)
- Structural Analysis III (7th semester)
- Elastoplastic Structural Analysis (8th semester)

2.2 Teaching (graduate courses)

Teaching (in common with Assist. Professor M. Moretti) of the following course in the context of the Postgraduate Studies Program "Applied mechanics and systems simulation" Dept. of Civil Engineering, University of Thessaly:

- Seismic Strengthening of Existing Structures

Teaching of the following course in the context of the Postgraduate Studies Program "Analysis and design of energy infrastructure construction" Dept. of Civil Engineering, University of Thessaly:

- Integrated Fire Design

1.3 Research Interests

1. Extension of classical mechanics to take into account the fractal type structure.
2. Theoretical study of the convergence of the Finite Element Method and the Boundary Element Method for fractal type structures.
3. Applications of principles and methods of classical and inequality Mechanics to the case of structures with fractal geometry.
   - Repair of cracks in reinforced concrete walls using adhesives.
   - Strength evaluation of cracked masonry structures.
   - Cracks in metallic structures.
   - Correlation of friction coefficient with the fractal characteristics of the interface.
4. Data compression by using fractal geometry.
5. Fractal evaluation of pavement skid resistance variations.
6. Dynamic response of multidrum columns

1.4 Scientific journals reviewer

1. Solids and Structures
2. Computers and Structures
3. Engineering Structures
4. Mathematical Problems in Engineering
5. Advanced in Materials Science and Engineering (Hindawi)
6. Part C: Journal of Mechanical Engineering Science (SAGE journals)
7. Advances in Concrete Construction, An International Journal (Techno Press)
8. International Journal of Modern Physics B (World Scientific)
9. Shock and Vibration (Hindawi)

1.5 Participation in national and international research programs

1. *Dynamic and wave interaction phenomena in the framework of nonsmooth mechanics*

Funded by: Greek Secretariat of Research and Technology
Duration: 1989 - 1991.

2. *ΠΕΝΕΔ 89ΕΔ 432, Analysis and design of the limit properties of composite materials*.

Funded by: Greek Secretariat of Research and Technology
Duration: 1991 - 1994.

3. *ΠΕΝΕΔ 91 ΕΔ 752, Design of neural networks for the analysis of fibre reinforced composite materials.*

Funded by: Greek Secretariat of Research and Technology
Duration: 1994 - 1996.

4. *Solving combinatorial optimization problems in parallel (EU reference: Contract CHRX-CT94-0640).*

Funded by: European community
Duration: 1994 - 1996.

5. *Fractal compression of data and results in calculations with the F.E.M.*

Funded by: Greek Secretariat of Research and Technology
Duration: 1996 - 1998.

6. *COST - C1: Semirigid connections in Civil Engineering Structures* (joint European action)
   Participation in the working group "Steel and composite structures" (1993-1999)
   Participation in the working group "Seismic resistant structures" (1994-1999)
   Participation in the working group "Numerical simulation" (1993-1999)
   Participation in the working group "Databases" (1994-1999)

Funded by: European community
Duration: 1993 – 1999

7. *Rapid visual screening of School Buildings in the Prefectures of Fthiotida, Magnesia, Karditsa, Larissa, Trikala, Arta, Euritania, Thesprotia*

Funded by: School Buildings Organization S.A.

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Duration: 2004 –2009

1. LIST OF PUBLICATIONS

I. DOCTORAL THESIS

1. O.K. Panagouli, " The Fractal Geometry in Structural Analysis", Doctoral Thesis, Aristotle University, 1992 (in Greek)

II. PAPERS IN SCIENTIFIC JOURNALS

II-1. P.D. Panagiotopoulos and **O.K. Panagouli**, "Fractal Interfaces in Structures: Methods of Calculation", *Computers and Structures*, Vol 45(2), pp. 369-380, 1992.

II-2. P.D. Panagiotopoulos, E.S. Mistakidis and **O.K. Panagouli**, "Fractal Interfaces with Unilateral Contact and Friction Conditions", *Computer Methods in Applied Mechanics and Engineering*, Vol 99, pp. 395-412, 1992.

II-3. **O.K. Panagouli**, P.D. Panagiotopoulos and E.S. Mistakidis, "On the Numerical Solution of Structures with Fractal Geometry. The F.E. Approach", *Meccanica*, Vol 27, pp. 263-274, 1992.

II-4. E.S. Mistakidis, P.D. Panagiotopoulos and **O.K. Panagouli**, "Fractal Surfaces and Interfaces in Structures. Methods and Algorithms", *Chaos, Solitons and Fractals*, Vol 2, pp. 551-574, 1992.

II-5. P.D. Panagiotopoulos, **O.K. Panagouli** and E.S. Mistakidis, "Fractal Geometry and Fractal Material Behaviour in Solids and Structures", *Archive of Applied Mechanics*, Vol 63, pp. 1-24, 1993.

II-6. P.D. Panagiotopoulos, **O.K. Panagouli** and E.S. Mistakidis, "On the Consideration of the Geometric and Physical Fractality in Solid Mechanics I: Theoretical Results", *ZAMM*, Vol 74 (3), pp. 167-176, 1994.

II-7. P.D. Panagiotopoulos, **O.K. Panagouli** and E.S. Mistakidis, "Fractal Geometry in Structures. Numerical Methods for Convex Energy Problems", *Solids and Structures*, Vol. 31(16), pp. 2211-2228, 1994.

II-8. P.D. Panagiotopoulos, **O.K. Panagouli** and E.K. Koltsakis, "The BEM in Plane Elastic Bodies with Cracks and/or Boundaries of Fractal Geometry", *Computational Mechanics*, Vol. 15(4), 1995.

II-9. **O.K. Panagouli**, P.D. Panagiotopoulos and E.S. Mistakidis, "Friction Laws of Fractal Type and the Corresponding Contact Problems", *Chaos Solitons and Fractals*, Vol. 5(11), pp. 2109-2119, 1995.

II-10. P.D. Panagiotopoulos and **O.K. Panagouli**, "The B.E.M. in Plates with Boundaries of Fractal Geometry", *Engineering Analysis with Boundary Elements*, Vol. 17, pp. 153-160, 1996.

II-11. **O.K. Panagouli** and P.D. Panagiotopoulos, "The FEM and BEM for Fractal Boundaries and Interfaces. Applications to Unilateral Problems", *Computers and Structures*, Vol. 64, pp. 329-339, 1997.

II-12. **O.K. Panagouli**, "On the Fractal Nature of Problems in Mechanics", *Chaos Solitons and Fractals*, Vol. 8(2), pp. 287-301, 1997.

II-13. P.D. Panagiotopoulos and **O.K. Panagouli**, "Mechanics on Fractal Bodies. Data Compression Using Fractals", *Chaos Solitons and Fractals*, Vol. 8(2), pp. 253-267, 1997.

II-14. **O.K. Panagouli**, E.S. Mistakidis and P.D. Panagiotopoulos, "On the Fractal Fracture in Brittle Structures. Numerical Approach", *Computer Methods in Applied Mechanics and Engineering*, Vol. 147, pp. 1-15, 1997.

II-15. E.S. Mistakidis, **O.K. Panagouli** and P.D. Panagiotopoulos, "Unilateral Contact Problems with Fractal Geometry and Fractal Friction Laws: Methods of Calculation", *Computational Mechanics*, Vol.21, pp. 353-362, 1998.

II-16. P.S. Theocaris, P.D. Panagiotopoulos, **O.K. Panagouli**, and E.S. Mistakidis, "On Debonding and Delamination Effects in Adhesively Bonded Cracks of Fractal Type", *Journal of Elasticity*, Vol.51, pp. 177-201, 1998.

II-17. **O.K. Panagouli** and A.G. Kokkalis, "Skid Resistance and Fractal Structure of Pavement Surface", *Chaos, Solitons and Fractals*, Vol.9(3), pp. 493-505, 1998.

II-18. A.G. Kokkalis and **O.K. Panagouli**, "Fractal Evaluation of Pavement Skid Resistance Variations. I: Surface Wetting", *Chaos, Solitons and Fractals*, Vol.9(11), pp. 1875-1890, 1998.

II-19. A.G. Kokkalis and **O.K. Panagouli**, "Fractal Evaluation of Pavement Skid Resistance Variations. II: Surface Wear" **,** *Chaos, Solitons and Fractals*, Vol.9(11), pp. 1891-1899, 1998.

II-20. G.D. Hu, P.D. Panagiotopoulos, **O.K. Panagouli**, O. Scherf and P. Wriggers, "Adaptive Finite Element Analysis of Fractal Interfaces in Contact Problems", *Computer Methods in Applied Mechanics and Engineering*, Vol.182, pp. 17-37, 2000.

II-21. A.G. Kokkalis, G.H. Tsohos and **O.K. Panagouli**, "A Consideration of Fractals Potential in Pavement Skid Resistance Evalution", *Journal of Transportation Eng. - ASCE*, 126(6), pp. 591-595, 2002 (technical note).

II-22. E.S. Mistakidis and **O.K. Panagouli**, " Strength Evaluation of Retrofit Shear Wall Elements with Interfaces of Fractal Geometry" *Engineering Structures*, 24, pp. 649–659, 2002.

II-23. E.S. Mistakidis and **O.K. Panagouli**, " Friction Evolution as a Result of Roughness in Fractal Interfaces" *Engineering Computations*, 20(1) , pp. 40-57, 2003.

II-24. **O.K. Panagouli** and E.S. Mistakidis, "Dependence of contact area on the resolution of fractal interfaces in elastic and inelastic problems" *Engineering Computations*, 28(6), pp.717-746, 2011.

II-25. **O.K. Panagouli** and K. Iordanidou, "Dependence of friction coefficient on the resolution and fractal dimension of metallic fracture surfaces" *Solids and Structures*, 50, pp. 3106-3118, 2013.

II-26. **O.K. Panagouli** and K. Iordanidou, "Study of the residual strength of an rc shear wall with fractal crack taking into account interlocking interface phenomena" *Mathematical Problems in Engineering*, 2013.

II-27. K. Georgiadi-Stefanidi, **O.K. Panagouli** and A. Kapatsina, " Numerical modeling of the pull-out response of inclined hooked steel fibres" *Advances in Concrete Construction*, 2015.

II-28. **O.K. Panagouli** and K. Mastrodimou, "Dependence of friction coefficient on the resolution of asperities in metallic rough surfaces under cyclic loading" *Int. Journal of Solids and Structures*, 108, pp. 85-97, 2017.

II-29. **O. K. Panagouli**, "Effects of multi-scale structure and fractal dimension on the friction mechanism in rough surfaces under horizontal dynamic excitation" *Fractals*, 27(4), 2019.

III. PAPERS IN CONTRIBUTED VOLUMES

III-1. P.D. Panagiotopoulos and **O.K. Panagouli**, "The BIEM for Fractal Boundaries and Interfaces. Applications to Unilateral Problems in Geomechanics", in *Boundary Element Techniques in Geomechanics*, Comp. Mechanics Publications *CMP* (Ed. G.D. Manolis and T.G. Davies), pp. 477-496.

III-2. P.D. Panagiotopoulos, E.S. Mistakidis, G.E. Stavroulakis and **O.K. Panagouli**, "Multilevel Optimization Methods in Mechanics: Calculations, Validations and Accuracy of Assumptions, Optimization for Fractal Geometries", in *Multilevel Optimization: Algorithms, Complexity and Applications* (Ed. A. Migdalas, P. Pardalos and P. Varbrand), Kluwer Academic Publishers, pp. 51-90, 1998.

III-3. P.D. Panagiotopoulos and **O.K. Panagouli**, "Fractal Geometry in Contact Mechanics and Numerical Applications" in *CISM-Book on Scaling, Fractals and Fractional Calculus in Continum Mechanics* (Ed. A. Carpinteri, F. Mainardi), Springer Verlag, pp. 109-171.

III-4. E. Stavroulakis, E.S. Mistakidis and **O.K. Panagouli**, "Multilevel Optimization in Mechanics", in *Encyclopedia of Optimization*, (Ed. C. A. Floudas and P. M. Pardalos), Springer Verlag, 2008.

III-5. **O. Panagouli** and E. Mistakidis, "A multi-resolution study on the behavior of fractal interfaces with unilateral contact conditions", in *Lecture Notes in Applied and Computational Mechanics*, Vol. 56 LNACM, (Ed. G. Stavroulakis), Springer Verlag, pp. 401-417, 2013.

IV. PAPERS IN CONFERENCE PROCEEDINGS

IV-1. **O.K. Panagouli** and P.D. Panagiotopoulos, "Fractals and Fractal Approximation in Structural Mechanics" in *Proc. 1st National Congress on Computational Mechanics* (Ed. D. Beskos), Vol. 1, pp. 229-236, Athens, 1992.

IV-2. P.D. Panagiotopoulos, **O.K. Panagouli** and E.S. Mistakidis, "Fractal Interfaces in Contact Problems. Theory and Numerical Applications" *in Proc. Contact Mechanics Int. Symp.* (Ed. A. Curnier), pp. 237-260, PPUR, Lausanne, 1992.

IV-3. P.D. Panagiotopoulos and **O.K. Panagouli**, "Unilateral Contact and Friction in Fractal Interfaces. Numerical Applications" in *Contact Mechanics Computational Techniques* (Eds. M.H. Aliabadi and C.A. Brebbia), pp. 353-360, CM Publ. , Southampton, 1993.

IV-4. **O.K. Panagouli** and P.D. Panagiotopoulos, "The FEM and BEM in Plane Elastic Bodies with Fractal Geometry of Boundaries and Interfaces", in *Proc. of the 2nd Conference on Computational Structures Technology*, (Ed. M. Papadrakakis and B.H.V. Topping), Civil-Comp Press, 1994.

IV-5. E.S. Mistakidis, P.D. Panagiotopoulos and **O.K. Panagouli**, "Contact- Friction of Fuzzy Type. Contact-Friction of Fractal Type", in *Contact Mechanics*, (Eds. M. Raous, M. Jean and J.J. Moreau), pp. 33-36, Plenum, N. York, 1995.

IV-6. **O.K. Panagouli**, E.S. Mistakidis, P.D. Panagiotopoulos and A.A. Liolios, "Fractal Interfaces in Masonry Stuctures. Methods of Calclulation", in *Dynamics, Repairs & Restoration*, (Eds. C.A. Brebbia, B. Leftheris,) pp. 291-298, CM Pub. 1995.

IV-7. A.A. Liolios, P.D. Panagiotopoulos, **O.K. Panagouli** and E.S. Mistakidis, "Two Sided Solution Bounds in Unilateral Contact Elastomechanics under P- Delta Effects", in *Contact Mechanics II - Computational Techniques* (Eds. M.H. Aliabadi and C.Alessandri), pp.455-459, CM Pub., Southampton-Boston 1995.

IV-8. **O.K. Panagouli**, E.S. Mistakidis and P.D. Panagiotopoulos, "Fractal Interpolation Functions for the Description of Friction Laws in Unilateral Contact Problems", in *Proc. of the 2nd National Conference on Computational Mechanics*, (Eds D.A. Sotiropoulos, D.E. Beskos), pp. 468-475.

IV-9. **O.K. Panagouli**, E.S. Mistakidis and P.D. Panagiotopoulos, "Friction Laws of Fractal Type. Theory and Numerical Applications", in *Proc. of 2nd International Conference on Tribology* (Ed. K.D. Bouzakis), pp.733-740, P. Ziti & Co. Publ., Thessaloniki, 1996.

IV-10. P.D. Panagiotopoulos and **O.K. Panagouli**, "Fractal Data Compression in FEM", in *Proc. of the 2nd European Conference on Numerical Methods in Engineering*, (Eds J.A. Desideri, P.Le Tallec, E. Onate, J. Peraux, E. Stein), pp. 1013-1017, Wiley, 1996.

IV-11. E.S. Mistakidis, **O.K. Panagouli** and N.P. Politis, "A Nonconvex-Nonsmooth Energy Optimization Approach for The Strength Evaluation of Retrofit Shear Wall Elements" *IASS-IACM 2000 International Conference*, Chania, 2000.

IV-12. E.S. Mistakidis and **O.K. Panagouli**, "The Influence of Fractality of the Asperities to the Evolution of the friction Mechanism" ECCM2001, *European Conference on Computational Mechanics*, Poland, 2001.

IV-13. **O.K. Panagouli** and E.S. Mistakidis, " Friction Evolution in Fractal Interfaces", *6th National Congress of Mechanics*, Vol. II, pp. 84-89, Thessaloniki 2001.

IV-14. **O.K. Panagouli** and E.S. Mistakidis, Effect Of The Different Fractal Approaches For The Modeling Of The Interface Roughness On The Overall Structural Response, *1st International Conference on Nonsmooth/Nonconvex Mechanics with Applications in Engineering* (in Memoriam of Professor P.D. Panagiotopoulos),pp. 119-126, Thessaloniki, July 2002.

IV-15. E.S. Mistakidis and **O.K. Panagouli**, Modelling of the Behaviour of Ultra- High Strength Fiber Reinforced Concrete by Means of Nonconvex Energy Superpotentials, *National Conference on Computational Mechanics*, Cyprus 2005.

IV-16. E.S. Mistakidis and **O.K. Panagouli**, A Nonsmooth- Mechanics Approach for the Analysis of the Bending Behaviour of Fibre- Reinforced Concrete Specimens, *2nd International Conference on Nonsmooth/Nonconvex Mechanics with Applications in Engineering* (in Memoriam of Professor P.D. Panagiotopoulos), Thessaloniki, July 2006.

IV-17. **O.K. Panagouli** and E.S. Mistakidis, A Multi-resolution Study on the Behavior of Fractal Interfaces with Unilateral Contact Conditions, *5th Contact Mechancs International Symposium*, Chania, April 2009.

IV-18. **O.K. Panagouli**, and E.S. Mistakidis, Dependence of Contact Area on the Resolution of Fractal Interfaces for Elastic and Inelastic Problems, *2nd South – East European Conference on Computational Mechanics, An IACM-ECCOMAS Special Interest Conference,* Rhodes, June 2009.

IV-19. **O.K. Panagouli**, and E.S. Mistakidis, Dependence of Friction Coefficient on the resolution of Fractal Interfaces, 9th HSTAM International Congress on Mechanics, Limassol, Cyprus, July, 2010.

IV-20. **O.K. Panagouli**, E.S. Mistakidis and K. Iordanidou, Seismic Strength Evaluation of Reinforced Concrete Shear Walls with Cracks, Using the Notion of Fractal Geometry, 3rd International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, COMPDYN 2011, Corfu, May, 2011.

IV-21. K. Georgiadi-Stefanidi, E.S. Mistakidis, A. Kapatsina and **O.K. Panagouli**, Numerical Modelling of the Pull-out of Inclined Hooked Steel Fibres from High-Strength Cementitious Matrix, 7th GRACM International Congress on Computational Mechanics, Athens, July 2011.

IV-22. **O.K. Panagouli**, K. Mastrodimou, Dynamic Friction Coefficient of Metallic Fracture Interfaces with Fractal Geometry, 8th GRACM International Congress on Computational Mechanics, Volos, July 2015.

IV-23. **O.K. Panagouli**, Thermal Contact Conductance of Rough Surfaces Under High Pressure, 11th HSTAM International Congress on Mechanics, Athens, May 2016.

IV-24. **O.K. Panagouli**, K. Margaronis, V. Tsotoulidou, A Multiscale Model for Thermal Contact Conductance of Rough Surfaces Under Low Applied Pressure, COMUS 17- Computational Modelling of Multi-uncertainty and Multi-scale Problems, Porto, September 2017.

IV-25. Bilis, M. Magnisali, **O. Panagouli**, E. Mistakidis and T. Kouimtzoglou, Steel Canopy in the Archeaological Site of Kalapodi, 9th National Conference of Steel Structures, Larissa, 2017.

IV-26. T. Bilis, M. Magnisali, **O. Panagouli**, E. Mistakidis, P. Tokmakidis, A. Thodorou, T. Kouimtzoglou, Steel Canopy of the Gymnasium Stoas at Ancient Messene, 9th National Conference of Steel Structures, Larissa, 2017.

IV-27. K. Kontolati, A. Koukouselis, O. Panagouli, Numerical Investigation of Weak Axis I Profile Connections, 9th National Conference of Steel Structures, Larissa, 2017.